PTO 09-2532

CC = JP
19900925
A
02240295

ELECTRODEPOSITION METHOD FOR AUTOMOBILES

[Jidosha no denchaku toso hoho]

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UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. FEBRUARY 2009
TRANSLATED BY: THE MCELROY TRANSLATION COMPANY

PUBLICATION COUNTRY	(19):	JP
DOCUMENT NUMBER	(11):	02240295
DOCUMENT KIND	(12):	A
PUBLICATION DATE	(43):	19900925
APPLICATION NUMBER	(21):	01061738
APPLICATION DATE	(22):	19890314
INTERNATIONAL CLASSIFICATION[5]	(51):	C 25 D 13/00
		B 05 D 7/14
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TITLE	(54):	ELECTRODEPOSITION METHOD FOR AUTOMOBILES
FOREIGN TITLE	[54A]:	Jidosha no denchaku toso hoho

Claim

Electrodeposition method for automobiles characterized by the fact that it provides a hot-water rinse/moisture-removal process after completion of the electrodeposition process and then, without interposing of a baking process, sealer/undercoating process and/or middle-coating process is performed.

Detailed explanation of the invention

Industrial application field

This invention pertains to electrodeposition methods for automobiles.

Prior art and problem to be solved by this invention

In the past, electrodeposition methods for automobiles were conducted in the sequence shown in Figure 2.

That is, after pre-treatment (201), electrodeposition (203) is carried out, followed by baking (204) is performed. Sol sealer/undercoating (205) and middle coating (207) are then carried out. Additionally, after the sol sealer/undercoating (205) and middle coating (207) are completed, baking (206, 208) is performed.

The prior electrodeposition method described above, however, established a baking process after each coating process (203, 205, 207 above). A large amount of heat was consumed and energy conservation thereof was desired. Particularly since the set temperature for the baking (204) after electrodeposition (203) was a high 170-200°C, the amount of heat consumed was high and a countermeasure was desired.

Means to solve the problem

This invention was made in view of the above circumstances and presents an automobile electrodeposition method that provides hot-water rinse/moisture-removal process after completion of the electrodeposition process and then, without interposing of a baking process, sealer/undercoating process and/or middle-coating process is performed.

Application example and effects

The automobile electrodeposition method pertaining to this invention is explained below while referring to the application example shown in the attached figure.

Figure 1 shows the automobile electrodeposition method pertaining to this invention.

In this invention, as shown in Figure 1, after the pre-treatment process (101), the electrodeposition process (102) is performed without shedding water or drying. Next, the hot-water rinse/moisture-removal process (103) that constitutes the characteristic of this invention is performed. After this, without undergoing a baking process, sol sealer/undercoating process (104) and middle coating process (105) are performed. After the middle coating process (105), a baking process (106) is carried out, followed by processes such as top-coating.

The above pre-treatment process (101) is the same as usual and it includes processes for applying rust-proofing to the steel plate or improving adhesion between the steel plate and paint, by performing de-fatting, etc.

In the above electrodeposition process (102), the final pure water rinsing process can be replaced with a hot-water rinse/moisture-removal process (103). Since baking process (106) is performed at 140-170°C, moisture removal from the electrodeposition paint during the moisture removal process of the hot-water rinse/moisture-removal process (103) is easy and products baked at low temperature (150°C) are used.

In the above hot-water rinse/moisture-removal process (103), the hot water rinse process is performed at 40-80°C. The moisture-removal process is performed in the following sequence.

(1) The car body is tilted forward and backward, right and left to remove moisture pooling in depressions or pouches in the floor, etc.

(2) Water droplets are removed by a vacuum process (by bringing the suction nozzle close to the outer car body plate).

(3) Additional moisture is removed with a hot-air blower.

In the above sol sealer/undercoating process (104), the materials are those that do not deteriorate even when baked at temperatures of 160-170°C. Moreover, due to elimination of baking after electrodeposition (102), materials that can adhere to wet electrodeposited surfaces are used. Furthermore, because the step of baking after this sol sealer/undercoating process (104) is omitted, water-soluble middle coat paint materials for which coating is possible by so-called wet-on-wet [coating] are used in the subsequent middle coating process (105).

In the above middle coating process (105), the use of water-soluble paint is a feature. That is, solvent-type paints that are commonly used for performing wet-on-wet coating onto electrodeposited films are not used for this middle coating process (105).

Effects

As above, because this invention makes it possible to eliminate water-shedding/drying after the pre-treatment process and to carry out sol sealer/undercoating process and middle coating process without undergoing baking processes, thus, the amount of heat required for these water-shedding/drying and baking processes becomes unnecessary. Polishing before the middle coating process also becomes unnecessary, thus allowing a reduction in the number of processes and in cost to be designed. Moreover,

because the middle coating paint is water soluble, equipment cost can be reduced compared to that of previous solvent-type products. Its effects are significant.

Brief description of the figures

Figure 1 is a block diagram illustrating the automobile painting method of this invention. Figure 2 is a block diagram illustrating prior automobile painting methods.

102 [sic; 101], 201	Pre-treatment processes
102, 203	Electrodeposition processes
102 [sic]	Hot water rinse/moisture removal process
104, 205	Sol sealer/undercoating processes
105, 207	Middle coating processes
106, 206, 208	Baking processes

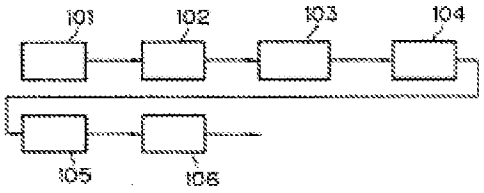

Figure 1

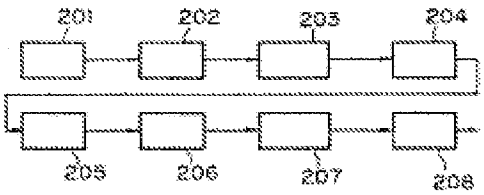

Figure 2